



## **SAMLING PLYWOOD (BARAMAS) SDN BHD**

### **Forest Management Plan Public Summary for Sela'an Linau Forest Management Unit**

#### **Executive Summary\***

This comprehensive, integrated Forest Management Plan (FMP) for the first Forest Management Unit (FMU) – Sela'an-Linau FMU - was done by a multi-disciplinary and multi-cultural team. The main objective of the FMP is to ensure that forest management practices within the FMU comply with 3 major aspects of Sustainable Forest Management (SFM) viz. socially compatible, ecologically sound and economically viable respectively. The Plan will be implemented from 2003 to 2013 and will be subject to a mid-term review to allow changes as necessitated by further research works and findings during the course of implementation.

The contents of the FMP are organised into 11 Chapters as follows:

- 1 Background
- 2 Forest Resource Assessment and Zoning
- 3 Management Plan Prescriptions
- 4 Silviculture, Forest Rehabilitation and Reforestation
- 5 Wildlife Management
- 6 Protection and Management of Protection Areas
- 7 Infrastructure Development
- 8 Community Development
- 9 Environment Impact Assessment
- 10 Occupational Health and Safety
- 11 Forest Research

Chapter 1 introduces the Forest Policy of Sarawak, Management Objectives, Area Description and Legal Status. The Ecological, Socio-cultural and Economic environments are also described in Chapter 1.

The implementation of Sarawak's Forest Policy are regulated by the Forest Ordinance, 1958 (Chapter 126), the Forest Rules (1973), the Forests (Planted Forests) Rules (1996), the Wildlife Protection Rules (1998), the Land Code, 1958 (Chapter 81) and the Natural Resources and Environment Board Ordinance, 1958 (Chapter 84) and related orders and rules.

The FMP shall comply with the requirements of Certification Schemes under Malaysian Timber Certification Council (MTCC) as well as Forest Stewardship Council (FSC). The general management objectives are multi-functional (multi-purpose) forest management

through balancing and serving differing interests and needs of relevant stakeholders and while maintaining and/or enhancing the forest ecosystems and their self-renewal capacity. The Precautionary Principle shall apply whenever the effects of an optional measure are unknown or potentially negative.

The FMU is licensed to Samling Plywood (Baramas) Sdn. Bhd. (SPB) with Forest Timber Licence No T/0412. The present licensed period is 20 years expiring on 30 August 2013. The geographical location of T/0412 Sector A is between 3° 9" and 3° 29"N Latitude and 115° 0" and 115° 19" E Longitude covering an area of 55,949 hectares. A major part of the FMU comprises Tamu Abu and Suling-Sela'an Protected Forests.

There is no distinct rainy or dry period and the average annual precipitation ranges from approx. 3,300 to 5,900 mm per year. The average temperature at the lowest point would be about 26 ° C and about 14 ° C at the highest peak.

The FMU is entirely underlain by sedimentary rocks. Topographically, most of the area consists of broken, irregular hilly lowlands with moderate to steep terrains. The FMU covers an altitudinal range from 165 to 2,228 m above sea level. The major soil groups in and around are red yellow podzolic and skeletal soils or red yellow podzolic / skeletal soils associations.

The natural forest is dominantly Hill Mixed Dipterocarp Forest (MDF) covering about 72 % of the total area. Others are Kerangas Forest (22 %) and Montane Forest (6 %). Some riparian forests occur along the major rivers and tributaries.

The FMU has been selected as one key area for implementation of the Wildlife Master Plan for the State of Sarawak. Among the activities carried out in line with the Master Plan framework are wildlife surveys, educational measures and enforcement of the regulations. In an understanding with Wildlife Conservation Society (WCS) of New York, a study for High Conservation Value Forests (HCVFs) is to be organized and carried out later in Year 2004.

The local communities in the FMU consist of 3 ethnic groups: the Kenyahs, the Kelabits and the Penans. The Kenyahs and Kelabits are sedentary agrarian communities living along the main rivers of the Upper Baram Basin. The Penans, formerly nomadic hunter-gatherers, now settle down on the banks of river tributaries but continue to carry out some hunting and food gathering. Beside hunting and fishing, all local communities also collect various timber and non-timber resources for their subsistence needs from the forests. Although irrigated rice and cash crop cultivation are practised in some communities, shifting cultivation still remains as the most important traditional economic activity but at much-reduced scale. The logging camps also provide employment opportunities as operators / drivers and casual workers for trained and unskilled local people respectively.

SPB carries out both pre-harvesting planning and forest operations. Logs produced are transported along logging road to Tuyut Logpond where grading, species checks and scaling of the logs are carried out. Sarawak Forestry Corporation (SFC) carries out the royalty marking of logs at this place. Royaltied logs are then loaded onto barges for transportation down the Tinjar and Baram Rivers to the processing and export points at Baram River estuary, about 25 km north of Miri.

A multi-disciplinary Forest Resource Assessment (MDFRA) to obtain an overview of the actual conditions of all (forest) resources in the FMU was carried out within the framework of the FOMISS/GTZ Project under the partnership of SPB, Sarawak Forest Department (SFD) and German Agency for Technical Co-operation (GTZ) from 1998 to 2000. The results formed the data baseline for the preparation of this FMP under Chapter 2. The MDFRA covers the soils and sites (site classification); forest vegetation (timber and non-timber resources); wildlife habitats and species, recreation potential and socio-cultural assessment of the communities in and adjacent to the FMU.

A systematic grid assessment method of 1.5 km x 1.5 km with L-shaped plots, each 0.25 ha, was used in the MDFRA. Both Temporary FRA Plots (210) as well as Permanent Sample Plots (76) were established. Excluding plots falling on shifting cultivation areas and Kerangas Forests, a total of 275 such plots were used for the analysis of timber stocking and non-timber forest resources. Additional resource information was derived from aerial photo-interpretation.

About 93 % of the soil types consist of the skeletal soils (mainly Red Yellow Podzols) while the remaining 7 % are Alluvials and Podzols. The soil fertility is between good to very poor (more than 50%). About 54 % of the FMU has gradients of 25 ° and above. The erosion risk of major area is under severe erosion risk to medium to low risk. The soil compaction risk is between low to medium. The soil nutrient stock is poor to medium.

The most common forest type is Mixed Dipterocarp (MD) forest (40,655 ha), followed by Kerangas (11,904 ha) and Montane (3,390 ha). About 1,171 ha of MD forest were burnt in forest fire of 1997/98 El Nino occurrence.

The timber species stocking had been classified into 5 main groups namely commercial Dipterocarps and Non-Dipterocarps; protected Dipterocarps and non-Dipterocarps and non-commercial Non-Dipterocarps. Generally, the total stem numbers of Dipterocarps and Non-Dipterocarps species in primary forest (1,254 trees/ha) are higher than in logged-over forest (936 trees/ha). About 50% of potentially commercial trees (i.e. dbh > 60 cm for Dipterocarps and dbh > 45 cm for Non-Dipterocarps) in primary forest were harvested.

The total gross volume of commercial and non-commercial species of trees above 5 cm dbh is estimated to be 380 m<sup>3</sup>/ha for primary forests and 253 m<sup>3</sup>/ha for logged-over forests. The potential commercial volume of trees above 45 cm dbh is 183 m<sup>3</sup>/ha or

75% of the gross volume of 216 m<sup>3</sup>/ha. Only 77 m<sup>3</sup>/ha or 42% of the original commercial species (after deducting for defects) are left behind.

In 4-year old logged-over forest, the overall commercial stocking in the regeneration layer (< 5 cm dbh) showed regeneration to 80% of primary forest conditions. In the 5-20 cm dbh class, there are adequate potential crop trees for the future harvest with the commercial Dipterocarps showing an increase of 24% over primary forest condition. In the 21-45 cm dbh class, the Dipterocarps showed satisfactory recovery whereas the commercial Non-Dipterocarps are suppressed indicating a gradual relative shift to more valuable Dipterocarps in the forest succession following harvesting. The advanced growth in primary and logged-over forests showed considerable lack of good quality trees of commercial species. Silvicultural intervention can enhance the performance of both growth and value of the commercial species.

A total of 32 commercial non-timber plant species have been identified and grouped into Rattans, Bamboos, Palms and others. Both primary and logged-over forests are well stocked with rattans, the most common ones being Rotan Anak (*Calamus filipendulus*), followed by Rotan Batu (*C. javensis*) and Rotan Tut (*C. pogonacantus*); and palms.

Wide diversity of timber species is found e.g. 157 commercial Dipterocarps, 179 Non-Dipterocarps and 394 non-commercial non-Dipterocarps. More than 85% of commercial Dipterocarps occurring in primary forest are also found in logged-over forest. The same observation can be made in the case of the commercial and non-commercial Non-Dipterocarps. The protected Dipterocarps are Engkabang Jantong (*Shorea macrophylla*) and Engkabang Terendak (*Shorea seminis*). The protected Non-Dipterocarps are Menggris (*Koompassia malaccensis*), Entimau/Poko Ara (*Ficus spp.*) and Engkeras (*Aquilaria beccariana*).

The wildlife faunal survey recorded a total of 109 species of birds and 46 species of mammals representing less than 30% of the mammals and bird species known to occur within the 7 habitats identified within the FMU.

The Zoning of the FMU is determined by 3 main forest functions:

- Protection (soil protection, wildlife conservation, water catchments, high conservation value forests), 17,045 ha or 30 %
- Production (air borne or ground-based skidding system), 34,013 ha or 61 % and
- Community Use, 4,789 ha or 15 %

No logging will be allowed in the Protection Zone. In the Production Zone, only MDF (Classes I-III) are grouped into the production function. For wildlife conservation, 3 forest functions have been determined: Core Protection Zone, Low-use Production Zone and Production Zone. Most of the Community Use areas are used for shifting cultivation. Among the key attractions with eco-tourism potentials are waterfalls, fast flowing rivers, Karst areas and mountain ridges.

The Sustainable Yield Regulation for the FMU is based on a computer Growth and Yield Model called DIPSIMSA. Growth simulations were done using all inventory plots recorded in the FMU and also for plots in logged-over forests. Several Annual Allowable Cut (AAC) options were simulated ranging from 20,000 to 50,000 m<sup>3</sup> and the results indicated that 36,000 m<sup>3</sup>/ha is still at a sustainable basis over a 10-year projection period. Presently, a Monthly Production Limit (MPL) is imposed on the FMU in accordance with Section 67A – (1)(a) of the Forest Ordinance.

The Plan prescribes harvesting is restricted to trees of dbh 60 cm and above for Dipterocarps and 45 dbh cm and above for Non-Dipterocarps. The planning procedure for the forest roads and harvesting systems will be in accordance with the Forest Engineering Plan comprising of 2 distinct stages i.e. the general planning and operational planning stage. General planning involves preparation and submitting of a General Harvesting Plan (GP) for formal approval by SFC to be followed by operational planning of an annual Detailed Harvesting Plan (DP). The FMU is divided into 10 coupes.

The operational planning procedures for carrying out directional felling, reduced impact logging using tractors and helicopter harvesting are outlined in the 'Guidelines/Procedures for reduced and low impact harvesting systems' as provided by SFD. SFC would monitor and control the roading and harvesting operation by the Permit to Enter Coupe (PEC) system.

Silviculture and its objectives, principles, strategy and methods are described in Chapter 4. 21 blocks (2,348 ha) would be treated out of which 11 blocks (1,145 ha) fall into the highest priority classes 1 and 2. All silvicultural treatment shall be carried out according to the guideline on "Silvicultural Treatment of Logged-over Forest in the FOMISS-Samling Pilot Area". Enrichment planting is recommended for 10 blocks (1,121 ha). Reforestation of 2,445 ha of burnt forest has been proposed. A forest nursery was established to produce seedlings for the enrichment planting and reforestation or alternatively, wildings are used if available.

The management of wildlife in the FMU is considered in both protection and production areas under Chapter 5. Hunting by indigenous people is still permitted according to existing laws on access to forest resources. Control of hunting, education and preventive measures to protect the wildlife as outlined in the Master Plan for Wildlife in Sarawak are adopted and implemented with the full co-operation and active involvement of WCS, Local Communities and SPB staff. Identification and protection of fruit trees and salt licks are practiced. With support from SFD, SPB is in co-operation with WCS to undertake a pilot project on wildlife conservation in the FMU.

Protection and management of protection areas are addressed under Chapter 6. Protection areas are demarcated and critical boundaries regularly monitored by SFC. Further encroachment into natural forests by shifting cultivation activities are mitigated by raising awareness of local communities about provisions in the FMP. Forest fire management is more towards fire prevention rather than fire fighting. Waste is managed

by practising proper disposal. The protection areas such as water catchments and areas susceptible to severe erosion or other environmental hazards or with high biodiversity and aesthetic landscapes shall be managed by close monitoring to avoid human disturbances, in accordance with the relevant laws and regulations in Sarawak. Education through awareness raising campaigns targeting local people, company staff and workers is done to enhance understanding about the functions and importance of protection areas.

The infrastructure development under Chapter 7 concerns the construction of forest roads and bridges. Road design standards and procedures to follow when carrying out road construction, road surface drainage, water crossings using bridges and road maintenance are as outlined in the “Guidelines for Forest Road Layout and Construction” provided by SFD.

The concept of community development is described under Chapter 8. According to the “help for self-help principle”, local communities shall participate and be responsible for those functions and activities of development measures that they can provide by their own means. Facilitators for the community development project will come from SFC, SPB and any agency (whether government or non-government organization) that shall provide know-how and/or funds that are not available at the community level. A Liaison Committee comprising representatives from SFC, SPB and Local Communities and relevant Government Agencies is established to discuss and resolve matters concerning various parties during every quarterly meeting under the Terms of Reference for SFM Liaison Committee.

The Precautionary Principle shall be the basis whereby any activity with potentially negative environmental impact is either not carried out or implemented with proper mitigation methods that reduce impact. The provisions made on environment impact identification and mitigation in the “Forestry Guidelines for Environment Impact Assessment” by Natural Resources Environmental Board (NREB) are used in considering issues as well as mitigation measures to be applied in the FMU under Chapter 9.

The occupational health and safety of workers are outlined under Chapter 10. Considerations of workers’ health and safety during tree felling, skidding, log handling and scaling, land and river transportation, road construction and maintenance, and for camp office and workshop personnel are incorporated into the work instructions. In addition, training courses such as directional tree felling and maintenance of chain saws for proper usage and safety aspects are being carried out and periodically reviewed.

The final Chapter 11 touches 8 Permanent Sample Plots (PSPs). SFC will monitor the growth and yield development in the PSPs. More PSPs shall be established progressively in conjunction with the harvesting status of each coupe to build up the baseline data.

\*Sector A